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High Growth Factor Implosion Experiments on Nova* T. J. Murphy, O. L. Landen, C. J. Keane, B. A. Hammel, R. Brusasco, M. Cable, R. Cook, T. Dittrich, S. Haan, S. P. Hatchett, M. M. Marinak, R. McEachern, M. Nelson, L. Suter, and R. Wallace *Lawrence Livermore National Laboratory*, R. Chrien, J. Colvin, N. Hoffman, and W. Hsing, *Los Alamos National Laboratory*—Indirectly-driven implosions of ICF capsules with prescribed surface roughnesses have been used to test models of pusher-fuel mix due to saturated Rayleigh-Taylor growth of initial capsule perturbations. Initial surface roughnesses between 0.01 and 1.0 mm RMS have been achieved by using laser ablation to produce pits on the capsule surfaces. We have imploded capsules with random (“multimode”) and ordered (“single mode”) arrangements of pits. Ge-doped ablaters (~1.3 atom %) are used to reduce preheat and increase the growth of perturbations. Neutron yield degradation and variation of areal density (ρR) with initial surface finish are used as a measure of the effect of fuel-pusher mix. Comparisons between these experiments and modeling using LASNEX in 2-D and the 3-D HYDRA radiation hydrodynamics code will be shown.

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